

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P909657

Luminaire Tested: DFN2DIP-SQ4F0-140D090US840-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P909657
REPORT IS A COMBINATION OF REPORTS P901647 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-140D090US840-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

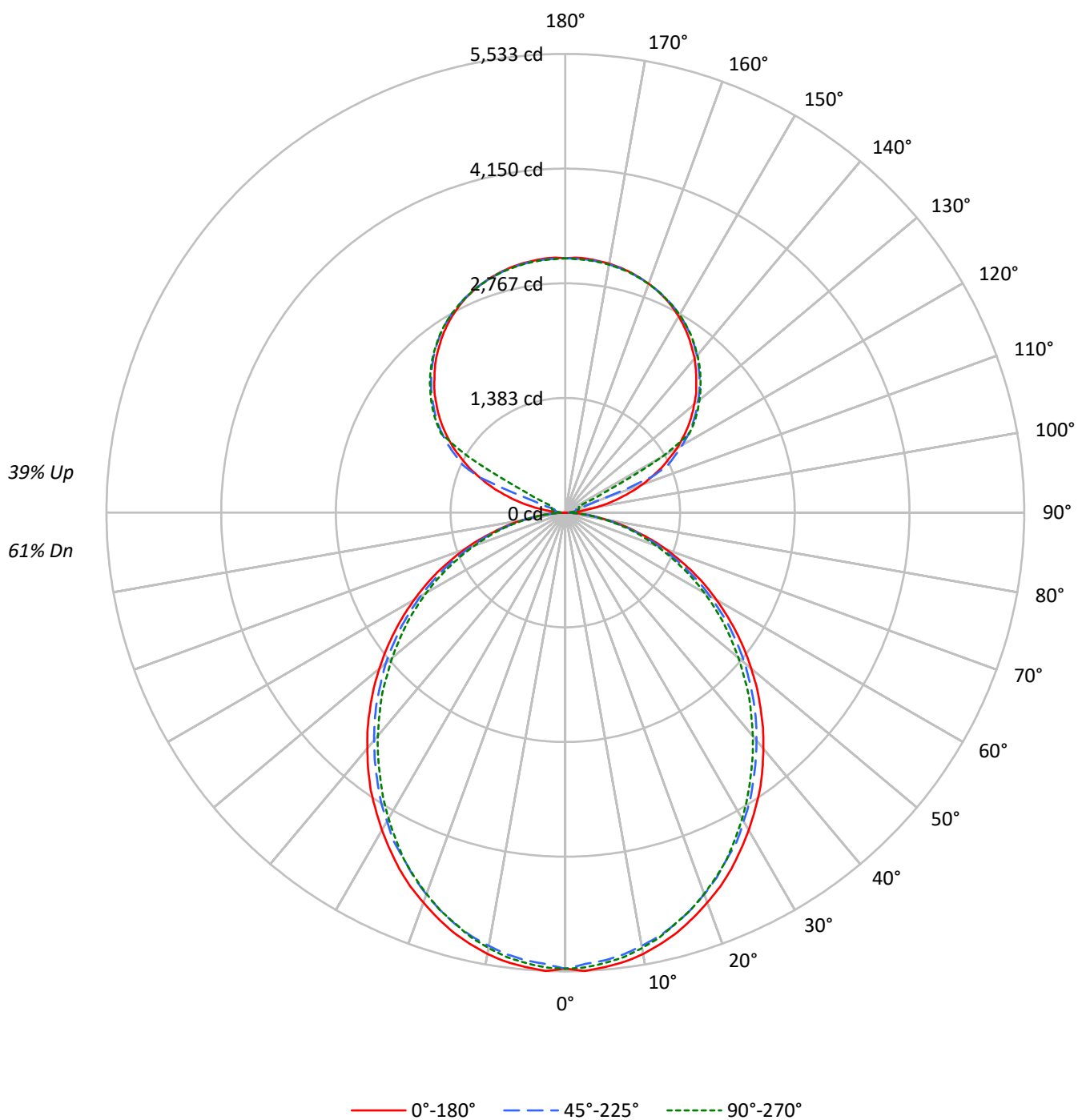
Lumens per Lamp: N/A
Luminaire Lumens: 22994.6 lumens
Efficiency: N/A
Efficacy: 109.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 210.5
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10		50	30	10		50
RCR																	
0	110	110	110	110	103	103	103	103	89	89	89		77	77	77		66
1	100	96	92	88	94	90	86	83	78	76	74		68	66	64		58
2	91	84	77	72	85	79	73	68	69	65	61		60	57	54		51
3	83	74	66	60	78	69	63	57	61	56	51		53	49	46		46
4	76	65	57	51	71	61	54	49	54	48	44		47	43	39		41
5	70	58	50	44	65	55	47	42	48	42	38		42	38	34		37
6	65	52	44	38	60	49	42	36	44	38	33		38	33	30		33
7	60	47	39	33	56	45	37	32	40	34	29		35	30	26		31
8	56	43	35	30	52	41	33	28	36	30	26		32	27	24		28
9	52	39	32	27	48	37	30	25	33	27	23		29	25	21		26
10	48	36	29	24	45	34	27	23	31	25	21		27	23	19		24

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3860	3860	3860
5°	3866	3807	3833
10°	3835	3757	3782
15°	3778	3695	3702
20°	3702	3610	3620
25°	3626	3508	3525
30°	3531	3413	3404
35°	3441	3301	3276
40°	3330	3188	3155
45°	3220	3075	3030
50°	3099	2956	2886
55°	2972	2819	2754
60°	2829	2655	2602
65°	2673	2487	2423
70°	2475	2280	2231
75°	2199	2034	2056
80°	1868	1721	1718
85°	1350	1177	1154

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3220 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	517.8	2.3
10°-20°	1456.8	6.3
20°-30°	2141.0	9.3
30°-40°	2486.6	10.8
40°-50°	2483.5	10.8
50°-60°	2165.5	9.4
60°-70°	1600.8	7.0
70°-80°	905.7	3.9
80°-90°	244.4	1.1
90°-100°	101.2	0.4
100°-110°	377.0	1.6
110°-120°	1000.0	4.3
120°-130°	1658.6	7.2
130°-140°	1761.8	7.7
140°-150°	1637.4	7.1
150°-160°	1316.4	5.7
160°-170°	848.2	3.7
170°-180°	292.0	1.3
0°-30°	4115.6	17.9
0°-40°	6602.1	28.7
0°-60°	11251.2	48.9
0°-90°	14002.1	60.9
90°-120°	1478.2	6.4
90°-150°	6535.9	28.4
90°-180°	8992.0	39.1
0°-180°	22994.6	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5501	5501	5501	5501	5501	
5°	5501	5480	5422	5464	5454	522
15°	5237	5206	5136	5158	5131	1475
25°	4740	4698	4608	4618	4608	2181
35°	4089	4036	3952	3920	3893	2554
45°	3328	3290	3211	3153	3132	2568
55°	2518	2486	2423	2359	2333	2251
65°	1698	1666	1614	1566	1539	1679
75°	888	878	851	820	831	948
85°	217	212	206	190	185	242
90°	2	27	44	56	60	21
95°	144	71	86	98	95	171
105°	675	741	135	160	169	721
115°	1276	1314	1370	342	182	1256
125°	1804	1833	1876	1891	1898	1609
135°	2233	2268	2288	2311	2306	1725
145°	2590	2588	2626	2641	2630	1620
155°	2852	2832	2859	2872	2854	1314
165°	3005	2992	2999	3014	2999	849
175°	3074	3058	3063	3078	3056	293
180°	3067	3067	3067	3067	3067	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5501.2	5501.2	5501.2	5501.2	5501.2
2.5°	5533.2	5506.8	5448.4	5501.2	5491.1
5°	5501.2	5480.4	5422.1	5464.2	5454.1
7.5°	5464.2	5432.8	5374.4	5417.0	5406.3
10°	5406.3	5369.4	5305.9	5348.0	5332.3
12.5°	5326.6	5295.2	5231.8	5258.2	5247.6
15°	5236.9	5205.5	5136.4	5157.8	5131.3
17.5°	5125.8	5094.4	5025.3	5051.7	5025.3
20°	5004.0	4972.6	4898.5	4914.2	4893.4
22.5°	4882.7	4835.0	4766.0	4766.0	4755.4
25°	4739.6	4697.5	4607.7	4617.8	4607.7
27.5°	4580.8	4543.8	4475.3	4459.6	4433.2
30°	4422.5	4379.9	4300.7	4285.1	4263.7
32.5°	4253.0	4221.6	4136.8	4104.9	4083.5
35°	4089.1	4036.4	3951.6	3919.7	3893.2
37.5°	3903.9	3856.3	3771.4	3734.5	3708.0
40°	3713.7	3671.1	3586.2	3539.2	3517.8
42.5°	3528.5	3485.9	3401.6	3348.3	3316.9
45°	3327.5	3290.5	3210.9	3153.0	3131.7
47.5°	3131.7	3094.6	3009.9	2951.5	2920.1
50°	2925.2	2898.8	2824.7	2750.6	2724.2
52.5°	2724.2	2687.2	2618.7	2560.3	2523.4
55°	2518.3	2486.3	2422.9	2359.4	2333.1
57.5°	2311.7	2285.3	2216.4	2152.9	2131.5
60°	2105.2	2084.5	2010.3	1952.0	1936.2
62.5°	1904.3	1867.2	1814.4	1761.7	1740.4
65°	1698.3	1666.3	1613.6	1565.8	1539.4
67.5°	1486.7	1459.8	1412.6	1375.5	1354.2
70°	1290.8	1269.5	1221.8	1184.8	1164.0
72.5°	1089.9	1068.5	1042.2	1005.2	989.5
75°	888.5	878.4	851.4	820.0	830.6
77.5°	708.8	687.5	676.8	661.2	645.4
80°	529.3	523.6	513.0	497.3	486.6
82.5°	359.7	359.7	354.7	333.4	333.4
85°	216.6	211.6	206.5	190.3	185.2
87.5°	95.4	84.7	74.1	58.4	52.7
90°	2.1	26.7	44.2	55.6	59.8
92.5°	55.6	46.7	53.2	57.8	59.8
95°	144.2	70.9	86.4	97.8	95.4
97.5°	259.6	77.8	113.1	119.9	122.0
100°	392.9	88.9	126.5	144.2	148.7
102.5°	539.3	535.0	131.0	155.2	162.1
105°	674.7	741.4	135.4	159.8	168.6
107.5°	832.3	887.7	140.0	164.2	173.2
110°	983.3	1029.8	388.5	166.5	175.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1125.4	1165.2	1127.5	170.8	177.6
115°	1276.2	1313.8	1369.5	341.8	182.1
117.5°	1407.1	1451.5	1489.3	1171.8	590.4
120°	1553.7	1586.9	1627.0	1653.6	1353.9
122.5°	1677.9	1713.4	1758.0	1771.1	1773.5
125°	1804.3	1833.3	1875.5	1891.1	1897.6
127.5°	1919.8	1950.9	1984.4	2006.5	2008.6
130°	2028.6	2064.3	2088.5	2112.9	2110.9
132.5°	2139.6	2168.6	2192.8	2212.9	2210.8
135°	2232.9	2268.5	2288.3	2310.7	2306.2
137.5°	2330.5	2357.0	2379.4	2401.6	2395.0
140°	2425.8	2443.8	2468.0	2488.0	2477.0
142.5°	2506.0	2521.5	2550.2	2567.9	2556.9
145°	2590.3	2587.9	2625.7	2641.2	2630.1
147.5°	2663.3	2656.8	2694.4	2705.5	2696.7
150°	2734.5	2719.0	2754.5	2767.6	2756.6
152.5°	2794.3	2776.6	2809.8	2823.3	2807.7
155°	2852.1	2832.3	2858.8	2872.1	2854.4
157.5°	2898.7	2881.0	2901.0	2916.6	2898.7
160°	2938.7	2925.3	2938.7	2951.9	2936.4
162.5°	2974.1	2960.8	2971.9	2987.5	2967.5
165°	3005.2	2991.9	2998.6	3014.1	2998.6
167.5°	3029.7	3016.3	3023.0	3038.6	3018.6
170°	3049.7	3036.3	3040.7	3056.3	3036.3
172.5°	3062.9	3049.7	3054.1	3069.7	3049.7
175°	3073.9	3058.4	3062.9	3078.4	3056.3
177.5°	3078.4	3062.9	3065.2	3080.8	3060.8
180°	3067.4	3067.4	3067.4	3067.4	3067.4

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CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	12.93	13.89	13.78	14.77	15.88	12.48	13.45	13.34	14.33	15.44
	3H	14.60	15.47	15.47	16.36	17.49	14.11	14.98	14.98	15.87	17.00
	4H	15.19	16.02	16.08	16.91	18.05	14.70	15.52	15.59	16.42	17.56
	6H	15.60	16.36	16.50	17.26	18.42	15.10	15.86	16.00	16.76	17.92
	8H	15.71	16.43	16.62	17.35	18.51	15.21	15.93	16.12	16.85	18.01
	12H	15.77	16.45	16.68	17.37	18.55	15.26	15.94	16.17	16.86	18.04
4H	2H	13.40	14.22	14.29	15.12	16.26	13.05	13.87	13.94	14.76	15.91
	3H	15.28	15.97	16.18	16.89	18.05	14.87	15.56	15.77	16.49	17.64
	4H	16.00	16.63	16.92	17.55	18.73	15.58	16.20	16.49	17.13	18.31
	6H	16.53	17.07	17.46	18.01	19.20	16.10	16.64	17.02	17.58	18.77
	8H	16.68	17.19	17.61	18.13	19.33	16.25	16.75	17.18	17.69	18.89
	12H	16.76	17.22	17.71	18.18	19.38	16.31	16.77	17.26	17.73	18.93
8H	4H	16.21	16.71	17.14	17.65	18.85	15.83	16.34	16.76	17.28	18.48
	6H	16.85	17.27	17.81	18.25	19.45	16.47	16.88	17.42	17.87	19.06
	8H	17.07	17.44	18.04	18.42	19.63	16.68	17.05	17.65	18.02	19.24
	12H	17.21	17.54	18.18	18.50	19.77	16.80	17.13	17.77	18.09	19.36
12H	4H	16.20	16.65	17.15	17.61	18.82	15.83	16.29	16.78	17.24	18.45
	6H	16.88	17.25	17.85	18.22	19.44	16.51	16.88	17.47	17.85	19.07
	8H	17.13	17.46	18.10	18.42	19.69	16.75	17.08	17.72	18.04	19.31